Claims

1. A method of producing a bioabsorbable, implantable substrate having a graded molecular weight distribution, comprising the steps of providing an implantable substrate and altering the molecular weight distribution of at least a portion of the implantable substrate by exposing that portion of the implantable substrate to electron beam irradiation.

2. A method as claimed in Claim 1 wherein the molecular weight distribution of the entire surface of the implantable substrate is altered by exposing the entire surface of the implantable substrate to electron beam irradiation.

3. A method as claimed in either one of Claims 1 and 2 wherein the implantable substrate is exposed to one or more doses of electron beam irradiation having an intensity of 0.1 to 10 MeV for 0.1 to 100 seconds and the electron beam irradiation penetrates 0.1 to 40 mm from the surface of the implantable substrate.

4. A method as claimed in any preceding claim wherein the implantable substrate is exposed to more than one dose of electron beam irradiation and each dose of electron beam irradiation is of a different intensity.

5. The method as claimed in Claim 4 wherein each dose of electron beam irradiation penetrates the implantable substrate to a different depth.

6. A method of modifying the rate of bioabsorbability of at least a portion of a bioabsorbable, implantable substrate comprising the step of exposing that portion to electron beam irradiation.

7. A bioabsorbable, implantable substrate obtainable according to the method of any preceding claim.

8. A bioabsorbable implantable substrate comprising a bioabsorbable polymer having a graded molecular weight distribution through at least a portion of its thickness.

9. The substrate of either one of Claims 7 and 8 wherein the rate of bioabsorbability of the implant is predetermined.

10. The substrate of any one of Claims 7 to 9 having a graded molecular weight distribution through the complete thickness of the implantable substrate.

11. The substrate of any one of Claims 7 to 10 having an outer surface and a core wherein the molecular weight distribution of the

implantable substrate is greater at the core than at the outer surface, and the rate of bioabsorbability of the core is less than the rate of bioabsorbability of the outer surface.

12. The substrate of Claim 11 wherein the outer surface and the core of the bioabsorbable implantable substrate are formed from the same material.

13. The substrate of any one of Claims 7 to 12 being formed from polyglycolide (PGA), polycaprolactone, polylactide (PLA), poly(dioxanone) (PDO), poly(glycolide-co-trimethylene carbonate) (PGA-TMC), polyanhydrides, poly(propylene fumarate), polyurethane, copolymers thereof or a combination thereof.

14. The substrate of any one of Claims 7 to 13 in the form of an interference screw, suture anchor, bioresorbable polymer composite, or a bioabsorbable scaffold for tissue regeneration and growth.

15. A method of treatment of a disorder of or damage to hard or soft tissue comprising the step of implanting the substrate of any one of Claims 7 to 14 into a human or animal body.

16. A method of treatment as claimed in Claim 15 wherein the disorder is osteo- or rheumatoid

arthritis, osteoporosis, inflammatory, neoplastic, traumatic or infectious tissue conditions, syndromes characterised by chondrodysplasia, cartilage damage, fracture, ligament tears, hernia, synovitis, systemic lupus erthematosus, or wounds sustained during surgery.

17. The substrate of any one of Claims 7 to 15 for use in therapy.

18. The use of the substrate of any one of Claims 7 to 14 in the manufacture of a medicament for the repair or treatment of disorders of or damage to hard or soft tissue of the human or animal body.